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## **Zotefoams Products For Use In Conservation Projects**

Conservation of artefacts and other works of fine art often involves the display, transport or otherwise the long term storage and protection of the pieces involved. In all of these situations the pieces are susceptible to degradation from environmental factors as well as accidental damage if not adequately protected. As a result the materials used to protect or support these often fragile or valuable pieces must have some basic characteristics, for instance they must be able to demonstrate :

- long term dimensional stability
- long term chemical stability
- inertness and high levels of purity
- ability to absorb shock loadings
- proven, unblemished record of use

The Plastazote<sup>®</sup> and Evazote<sup>®</sup> product ranges consist of crosslinked polyethylene foams and Ethylene - Vinyl Acetate copolymer foams respectively. These products are expanded using Zotefoams unique, nitrogen expansion process. The process creates an inert and stable, closed cell foam with isotropic mechanical properties and consistent structure. Additionally since nitrogen gas alone is used to expand the foam, the materials are completely free of any chemical blowing agents and the potentially harmful residues of such materials.

### **PURITY**

As there are no specific requirements for the purity of packaging materials used in conservation, then it is important that producers and suppliers are able to demonstrate the purity of the materials they supply with confidence. The suitability of Plastazote<sup>®</sup> and Evazote<sup>®</sup> foams has been proven over decades of use and they remain highly valued in applications in many museums and galleries. To support this experience :

- The materials are fully compliant with the European directive 2002/95/EC on the restriction of use of hazardous substances (commonly known as the 'RoHS' directive).
- The materials are fully compliant with the relevant requirements of European directive 1994/62/EC on packaging and packaging waste.
- The materials are Class I rated (suitable for use in articles designed for babies) against the textile industry standard, Oeko-Tex 100, which specifies levels of harmful substances such as heavy metals, azo dyes, chlorinated phenols, organo-tin species and volatile emissions.
- Plastazote<sup>®</sup> materials are fully compliant with the limits for water soluble chloride content, water soluble sulphate content, ammonium salts and antioxidants as required by UK Defence Standard 81-116/3. The materials are, as a result, considered suitable for the packaging of sensitive electronics and explosives / munitions.
- The materials are non-staining in contact with most metals and other materials.

- At no stage of the process for the manufacture of Plastazote® and Evazote® products are chemical blowing agents, hydrocarbon gases, sulphur, latex, phthalates or silicones utilised.
- The products are available in a very wide range of colours. For coloured foams only solid pigments, completely bound in the polymer matrix, are used (non-migratory, non-leaching). In black foams likewise, the black pigment is solid and completely bound in the polymer (non-sloughing).

### **ATTRIBUTES**

Under the type of storage conditions typically encountered in the museum industry, i.e. covered store, room temperature of 23°C / 50%RH, the foam will retain its' dimensions and properties for decades. If shock protection is required then the materials are an excellent choice, however specialist packaging design support should be sought to ensure the correct level of protection is afforded. Where particularly heavy loadings are involved, 'creep' may be observed. Creep is a property which is time, load, environment and product dependent. Again for heavy loading situations, specialist advice should be sought during the design stages to avoid problems at a later date.

In cases where outside storage is necessary then it is important to be aware that long term exposure to strong sunlight will cause degradation of all types of polyethylene based foams and materials. This can range from slight crazing of the surface, with little effect on the properties and performance, through to more severe powdering and yellowing of the material, depending on the duration and extent of the exposure. As all Zotefoams materials are crosslinked their temperature stability and UV resistance are greater than that of uncrosslinked polyethylene foams and black-coloured products will always afford greater resistance to the effects of UV than other colours.

### **PRODUCT RANGE**

The table below gives a very brief introduction to the range of materials and typical uses in the conservation sector, for more detailed information or to discuss specific application needs, contact Zotefoams Technical Service.

Product Range	Polymer	Density Range	Suitability
Plastazote® LD	LDPE	15kg/m <sup>3</sup> - 70kg/m <sup>3</sup>	Shock protection, cushioning during transport and storage.
Plastazote® HD	HDPE	30kg/m <sup>3</sup> - 115kg/m <sup>3</sup>	More rigid. Use in supports or for extreme loading situations, may easily be used in combination with Plastazote LD grades.
Evazote® VA	EVA	25kg/m <sup>3</sup> - 80kg/m <sup>3</sup>	More elastic / softer materials often used as 'soft-touch' solutions when in contact with very fragile or easily damaged surfaces.
Evazote® EV	EVA	30kg/m <sup>3</sup> - 50kg/m <sup>3</sup>	

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